

Appl. No.: 10/812,048
Amdt. dated 02/02/2006
Reply to Office action of 01/31/2006

Amendments to the Claims:

Cancel Claims 1 – 14

15. (Currently Amended) A reactor for removing alkali hydroxide and hydrogen peroxide contaminants from an aqueous alkali halide stream, comprising a reactor vessel; an alkali hydroxide inlet in the upper region of the vessel through which an alkali hydroxide stream is introduced into said upper region; a contaminated alkali halide inlet in the upper region of the vessel through which a contaminated alkali halide stream is introduced into said upper region; a chlorine gas inlet in the lower region of the vessel through which a stream of chlorine gas is introduced into said lower region, said stream of chlorine gas flowing counter-current to said alkali hydroxide and contaminated alkali halide streams so that said streams react to produce a stream of treated alkali halide; and a treated alkali halide outlet in the lower region of the vessel through which said stream of treated alkali halide exits said vessel.

16. (Original) The reactor of claim 15, further comprising a depleted alkali chloride solution inlet in the upper region of the vessel.

Cancel Claims 17 – 18

19. (New) The reactor of claim 16, further comprising a stream of depleted alkali chloride which is introduced into said vessel through said depleted alkali chloride solution inlet.

20. (New) The reactor of claim 19, wherein the stream of depleted alkali chloride comprises recycled potassium chloride.

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21. (New) The reactor of claim 15, further comprising a stream of depleted alkali chloride that is introduced into said stream of contaminated alkali halide prior to said stream of contaminated alkali halide being introduced into said vessel.

22. (New) The reactor of claim 15, wherein the stream of alkali hydroxide comprises potassium hydroxide.

23. (New) The reactor of claim 15, wherein the stream of contaminated alkali halide comprises a mixture of hydrogen peroxide, potassium chloride, and potassium hydroxide.

24. (New) The reactor of claim 15, wherein the stream of treated alkali halide comprises a stream of potassium chloride that contains substantially no hydrogen peroxide or potassium hydroxide.

25. (New) The reactor of claim 15, wherein the reaction of said stream of chlorine gas with said alkali hydroxide and contaminated alkali halide streams produces a stream of gaseous oxygen and said vessel further comprises a gaseous oxygen outlet through which the stream of gaseous oxygen is escapable.

26. (New) The reactor of claim 15, wherein the reactor vessel comprises a packed column reactor, a stirred reactor, or a falling film reactor.

27. (New) A reactor for removing alkali hydroxide and hydrogen peroxide contaminants from an aqueous alkali halide stream, comprising
a reactor vessel;
an alkali hydroxide inlet through which an alkali hydroxide stream is introduced into said vessel;
a contaminated alkali halide inlet through which a contaminated alkali halide stream is introduced into said vessel;

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a chlorine gas inlet through which a stream of chlorine gas is introduced into said vessel, said stream of chlorine gas flowing counter-current to said alkali hydroxide and contaminated alkali halide streams so that said streams react to produce a stream of treated alkali halide; and a treated alkali halide outlet through which said stream of treated alkali halide exits said vessel.